CHEM 1302 General Chemistry Laboratory II Lec. 0 Lab. 3 Cr. 1

Effective Date: Fall 2007

Course Description

Prerequisite: A grade of "C" or better in both CHEM 1201 and CHEM 1301. Prerequisite or corequisite: CHEM 1202. A continuation of General Chemistry Laboratory I, focusing on fundamental chemical topics covered in CHEM 1202 and elementary quantitative techniques.

Course Objectives

Students will:

1. Learn proper basic laboratory techniques.
2. Understand basic chemistry concepts demonstrated by the laboratory procedures.
3. Report measurements properly and use them to determine calculated values.
4. Learn how to construct a graph and interpret a graph.
5. Learn the proper use of a laboratory notebook.

Procedures to Evaluate these Objectives

1. Prelab assignments which acquaint the student with the concepts being used in the laboratory procedure.
2. Written laboratory reports which require the student to execute the experiment with proper technique and then apply the concepts to explain the results.
3. A midterm exam which requires the student to apply techniques and concepts learned in the laboratory procedures.
4. A comprehensive final exam.

Use of Results of Evaluation to Improve the Course

1. Evaluation and modification of laboratory techniques presentation during lab.
2. Prelab assignments will be graded and returned to the student prior to writing the laboratory report so that concept errors can be addressed before the student is required to use the material.
3. Laboratory reports will be corrected and used to pinpoint concept difficulties.
4. All evaluation methods will be used to determine the efficacy of the material presentation

Detailed Topical Outline

1. Basic laboratory techniques
    a. Safety
    b. Common glassware
    c. Buret and graduated cylinder measurements
    d. Analytical and top loading balances
    e. Volumetric flasks and pipets
    f. Brunsen burners and heating

2. Basic laboratory procedure
    a. Titrations
    b. pH meters
    c. Gravimetric analysis
    d. Visible spectrometry
    e. Dilutions
3. Chemical principles examined
    a. Acid, bases, and buffers
    b. Spectrophotometric analysis
    c. Kinetic of chemical reactions
    d. Equilibrium
    e. Oxidation/Reduction